

Claims

1. An implantable microfabricated sensor device for measuring a physiologic parameter of interest within a patient, said sensor comprising:

an implantable sensing device, said sensing device being a micro electromechanical system (MEMS) comprising a substrate, an integrated inductor formed on the substrate, at least one sensor responsive to the physiologic parameters and being formed at least in part on the substrate, a plurality of conductive paths electrically connecting said integrated inductor with said sensor, said integrated inductor, said sensor and said conductive paths cooperatively defining an LC tank resonator.

2. The sensor device of claim 1 wherein said sensor is a capacitive sensor having a fixed electrode and a moveable electrode.

3. The sensor device of claim 2 wherein said fixed electrode is formed on said substrate.

4. The sensor device of claim 1 wherein said integrated inductor includes a magnetic core and a winding comprised of a conductive material about said magnetic core.

5. The sensor device of claim 4 wherein said magnetic core includes a plate member formed on a first face of said substrate.

6. The sensor device of claim 5 wherein said magnetic core further includes a second plate member, said second plate member being formed on a second face of said substrate and located generally opposite of said first plate member.

7. The sensor device of claim 6 further comprising a post extending through said substrate and connecting said first plate to said second plate.

8. The sensor device of claim 5 wherein said winding is formed within said first plate.

9. The sensor device of claim 4 wherein said magnetic core includes first and second plate members connected to one another by a post.

10. The sensor device of claim 9 wherein said windings are about said post.

11. The sensor device of claim 10 wherein said windings are about said post and adjacent to said first plate.

12. The sensor device of claim 5 further comprising a cap layer formed over said plate member.

13. The sensor device of claim 12 wherein said cap layer includes a portion defining a moveable electrode of said sensor.

14. The sensor device of claim 12 wherein said cap layer is conductive.

15. The sensor device of claim 12 wherein said cap layer is doped silicon.

16. The sensor device of claim 2 wherein said sensor is a pressure sensor.

17. The sensor device of claim 2 wherein said sensor is a temperature sensor.

18. The sensor device of claim 2 wherein said sensor is a chemical sensor.

19. The sensor device of claim 1 further comprising active circuitry being formed in said sensing device.

20. The sensor device of claim 19 wherein said active circuitry is formed within a cap layer formed over said integrated inductor.

21. The sensor device of claim 1 wherein said sensor device is wireless.

22. The sensor device of claim 1 wherein said sensing device is monolithic.

23. The sensor device of claim 1 further comprising at least two sensors.

24. The sensor device of claim 23 wherein said two sensors sense the same physiologic parameter.

25. The sensor device of claim 23 wherein said two sensors sense different physiologic parameters.

26. The sensor device of claim 1 wherein said sensor is a capacitive sensor including a fixed electrode and a moveable electrode, said fixed and moveable electrodes defining a chamber therebetween, said chamber being in fluid communication with a displacement cavity.

27. The sensor device of claim 26 wherein said displacement cavity is defined within said substrate.

28. The sensor device of claim 1 wherein said sensor is a capacitive sensor having a fixed electrode and a moveable electrode, said fixed and moveable electrodes being electrically coupled by first and second traces to said integrated inductor, said first and second traces being electrically isolated from one another.

10989-005-012202

29. The sensor device of claim 28 wherein said traces are isolated by a dielectric layer therebetween.

30. The sensor device of claim 28 wherein said traces are isolated by a p-n junction structure.

31. The sensor device of claim 1 as part of a sensing system further comprising a non-implantable readout device, said readout device including a second inductor adapted to magnetically couple with said integrated inductor to read changes in said LC tank resonator as a result of said sensor sensing the physiologic parameter of interest.

2021 RELEASE UNDER E.O. 14176